



COMPLETE MICROBIOME MAPPING

General Macroscopic Description

	Result	Range	Markers
Stool Colour	Brown		Colour - Brown is the colour of normal stool. Other colours may indicate abnormal GIT conditions.
Stool Form	Semi-formed		Form -A formed stool is considered normal. Variations to this may indicate abnormal GIT conditions.
Mucous	NEG	< +	Mucous - Mucous production may indicate the presence of an infection, inflammation or malignancy.
Occult Blood	NEG	< +	Blood (Macro) - The presence of blood in the stool may indicate possible GIT ulcer, and must always be investigated immediately.

GIT Functional Markers	Result	Range	Units	
Calprotectin.	7.0	0.0 - 50.0	ug/g	
Pancreatic Elastase	414.2	> 200.0	ug/g	
Faecal Secretory IgA	182.5 *L	510.0 - 2010.0	ug/g	
Faecal Zonulin	56.9	0.0 - 107.0	ng/g	
Faecal B-Glucuronidase	2217.6	337.0 - 4433.0	U/g	
Steatocrit	<1.0	0.0 - 15.0	%	
anti-Gliadin IgA	<20	0.0 - 100.0	units/L	

Microbiome Mapping Summary

Parasites & Worms

Blastocystis hominis.

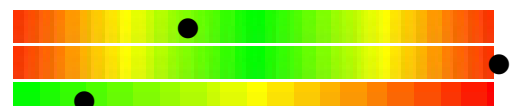
Bacteria & Viruses

Streptococcus species

Fungi and Yeasts

Key Phyla Microbiota

Bacteroidetes	14.50	8.61 - 33.10	x10 ¹¹ org/g
Firmicutes	56.01 *H	5.70 - 30.40	x10 ¹⁰ org/g
Firmicutes:Bacteroidetes Ratio	0.39	< 1.00	RATIO





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Parasites and Worms.	Result	Range	Units
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Parasitic Organisms

Cryptosporidium.	<dl	< 1.0	x10 ⁶ org/g	
Entamoeba histolytica.	<dl	< 1.0	x10 ⁴ org/g	
Giardia lamblia.	<dl	< 5.0	x10 ³ org/g	
Blastocystis hominis.	363.8 *H	< 2.0	x10 ³ org/g	
Dientamoeba fragilis.	<dl	< 1.0	x10 ⁵ org/g	
Endolimax nana	<dl	< 1.0	x10 ⁴ org/g	
Entamoeba coli.	<dl	< 5.0	x10 ⁶ org/g	
Pentatrichomonas hominis	<dl	< 1.0	x10 ² org/g	

Worms

Ancylostoma duodenale, Roundworm	Not Detected
Ascaris lumbricoides, Roundworm	Not Detected
Necator americanus, Hookworm	Not Detected
Trichuris trichiura, Whipworm	Not Detected
Taenia species, Tapeworm	Not Detected
Enterobius vermicularis, Pinworm	Not Detected

Comment: Not Detected results indicate the absence of detectable DNA in this sample for the worms reported.

Opportunistic Bacteria/Overgr	Result	Range	Units
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Bacillus species.	<dl	< 1.5	x10 ⁵ org/g	
Enterococcus faecalis	<dl	< 1.0	x10 ⁴ org/g	
Enterococcus faecium	<dl	< 1.0	x10 ⁴ org/g	
Morganella species	<dl	< 1.0	x10 ³ org/g	
Pseudomonas species	<dl	< 1.0	x10 ⁴ org/g	
Pseudomonas aeruginosa.	<dl	< 5.0	x10 ² org/g	
Staphylococcus species	<dl	< 1.0	x10 ⁴ org/g	
Staphylococcus aureus	<dl	< 5.0	x10 ² org/g	
Streptococcus species	14.7 *H	< 1.0	x10 ³ org/g	
Methanobacteriaceae	0.44	< 5.00	x10 ⁹ org/g	
Desulfovibrio piger	<dl	0.0 - 18.0	x10 ⁷ org/g	
Oxalobacter formigenes	21.0	> 15.0	x10 ⁷ org/g	

Potential Autoimmune Triggers

Citrobacter species.	<dl	< 5.0	x10 ⁵ org/g	
Citrobacter freundii.	<dl	< 5.0	x10 ⁵ org/g	
Klebsiella species	<dl	< 5.0	x10 ³ org/g	
Klebsiella pneumoniae.	<dl	< 5.0	x10 ⁴ org/g	
Prevotella copri	<dl	< 1.0	x10 ⁷ org/g	
Proteus species	<dl	< 5.0	x10 ⁴ org/g	
Proteus mirabilis.	<dl	< 1.0	x10 ³ org/g	
Fusobacterium species	0.24	< 10.00	x10 ⁷ org/g	

Fungi & Yeast	Result	Range	Units
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Candida species.	<dl	< 5.0	x10 ³ org/g	
Candida albicans.	<dl	< 5.0	x10 ² org/g	
Geotrichum species.	<dl	< 3.0	x10 ² org/g	
Microsporidium species	<dl	< 5.0	x10 ³ org/g	
Rhodotorula species.	<dl	< 1.0	x10 ³ org/g	



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Bacterial Pathogens	Result	Range	Units	
Aeromonas species.	<dl	< 1.0	x10 ³ CFU/g	●
Campylobacter.	<dl	< 1.0	x10 ³ CFU/g	●
C. difficile, Toxin A	<dl	< 1.0	x10 ³ CFU/g	●
C. difficile, Toxin B	<dl	< 1.0	x10 ³ CFU/g	●
Enterohemorrhagic E. coli	<dl	< 1.0	x10 ³ CFU/g	●
E. coli O157	<dl	< 1.0	x10 ² CFU/g	●
Enteroinvasive E. coli/Shigella	<dl	< 1.0	x10 ³ CFU/g	●
Enterotoxigenic E. coli LT/ST	<dl	< 1.0	x10 ³ CFU/g	●
Shiga-like Toxin E. coli stx1	<dl	< 1.0	x10 ³ CFU/g	●
Shiga-like Toxin E. coli stx2	<dl	< 1.0	x10 ³ CFU/g	●
Salmonella.	<dl	< 1.0	x10 ⁴ CFU/g	●
Vibrio cholerae	<dl	< 1.0	x10 ⁵ CFU/g	●
Yersinia enterocolitica.	<dl	< 1.0	x10 ⁵ CFU/g	●
Helicobacter pylori	<dl	< 1.0	x10 ³ CFU/g	●

Comment: Helico Pylori virulence factors will be listed below if detected POSITIVE

H.pylori Virulence Factor, babA	Not Detected	H.pylori Virulence Factor, cagA	Not Detected
H.pylori Virulence Factor, dupA	Not Detected	H.pylori Virulence Factor, iceA	Not Detected
H.pylori Virulence Factor, oipA	Not Detected	H.pylori Virulence Factor, vacA	Not Detected
H.pylori Virulence Factor, virB	Not Detected	H.pylori Virulence Factor, virD	Not Detected

Viral Pathogens	Result	Range	Units	
Adenovirus 40/41	<dl	< 1.0	x10 ¹⁰ CFU/g	●
Norovirus GI/II	<dl	< 1.0	x10 ⁷ CFU/g	●
Bocavirus	<dl	< 1.0	x10 ¹⁰ CFU/g	●

Normal Bacterial GUT Flora	Result	Range	Units	
Bacteroides fragilis	8.1	1.6 - 250.0	x10 ⁹ CFU/g	●
Bifidobacterium species	4.0 *L	> 6.7	x10 ⁷ CFU/g	●
Bifidobacterium longum	2.2 *L	> 5.2	x10 ⁶ CFU/g	●
Enterococcus species	46.4	1.9 - 2000.0	x10 ⁵ CFU/g	●
Escherichia species	4173.0 *H	3.7 - 3800.0	x10 ⁶ CFU/g	●
Lactobacillus species	194.4	8.6 - 6200.0	x10 ⁵ CFU/g	●
Lactobacillus Rhamnosus	8.1 *L	8.3 - 885.0	x10 ⁴ CFU/g	●
Clostridium species	55.8 *H	5.0 - 50.0	x10 ⁶ CFU/g	●
Enterobacter species	10.0	1.0 - 50.0	x10 ⁶ CFU/g	●
Akkermansia muciniphila	<dl *L	0.01 - 50.00	x10 ³ CFU/g	●
Faecalibacterium prausnitzii	89.0	1.0 - 500000	x10 ³ CFU/g	●

Short Chain Fatty Acids	Result	Range	Units	
Short Chain Fatty Acids, Beneficial	20.6	> 13.6	umol/g	●
Butyrate	9.3 *L	10.8 - 33.5	%	●
Acetate	67.7	44.5 - 72.4	%	●
Propionate	18.2	0.0 - 32.0	%	●
Valerate	4.8	0.5 - 7.0	%	●



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KIM O'BRIEN
30-Jan-1957

Female

26/1-7 RAILWAY AVENUE
STANMORE NSW 48

LAB ID : 3830410
UR NO. : 6609402
Collection Date : 24-Jul-2022
Received Date:28-Jul-2022



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Pathogen Summary:

Macroscopy Comment

BROWN coloured stool is considered normal in appearance.

Metabolism Comment

In a healthy gut Short Chain Fatty Acids are exhibited in the following proportions;
Butyrate, Acetate, Propionate (16% : 60% : 24%)

LOW BUTYRATE LEVEL:

Butyrate is a short chain fatty acid that is extremely important for gut health. It is the main fuel source for gut cells, which helps keep the gut cell barrier intact, can reduce inflammation, and helps control appetite. Low levels of butyrate production have been observed in individuals with inflammatory bowel diseases, insufficient fibre intake, slow transit time, recent antibiotic therapy. Low butyrate may also be associated with an increased risk of colon cancer & constipation.

Consuming foods high in resistant starch has been shown to increase butyrate levels.

VALERATE:

Valerate is a short chain fatty acid that is important for gut health. Although Acetate, propionate, and butyrate make up the the most abundant SCFAs in gastrointestinal tract (95%), Valerate and other SCFA's make up the remaining and work optimally when within range.



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GIT Markers Comment

PANCREATIC ELASTASE: Normal exocrine pancreatic function.

Pancreatic Elastase reflects trypsin, chymotrypsin, amylase and lipase activity.

This test is not affected by supplements of pancreatic enzymes.

Healthy individuals produce on average 500 ug/g of PE-1. Thus, levels below 500 ug/g and above 200 ug/g suggest a deviation from optimal pancreatic function.

The clinician should therefore consider digestive enzyme supplementation if one or more of the following conditions is present:

Loose watery stools, Undigested food in the stools, Post-prandial abdominal pain, Nausea or colicky abdominal pain, Gastroesophageal reflux symptoms, Bloating or food intolerance.

CALPROTECTIN Normal:

Faecal calprotectin values <50 ug/g are not indicative of inflammation in the gastrointestinal tract. Subjects with low faecal calprotectin levels normally do not need to be further investigated by invasive procedures. In patients with strong clinical indications of intestinal inflammation, repeat testing may be useful.

Test performed by Phadia ELIA Fluorescence enzyme immunoassay (FEIA).

LOW/LOW NORMAL sIgA LEVEL:

Secretory IgA represents the first line of defence of the gastrointestinal mucosa and is central to the normal function of the gastrointestinal tract as an immune barrier.

Secretory IgA binds to invading microorganisms and toxins and entrap them in the mucus layer or within the epithelial cells, so inhibiting microbial motility, agglutinating the organisms, and neutralising their exotoxins and then assist in their harmless elimination from the body in the faecal flow. sIgA also 'tags' food as acceptable, so low sIgA leads to increased sensitivity to foods. Several studies link stress and emotionality with levels of sIgA. Production is adversely affected by stress, which is mediated by cortisol levels.

Often low levels of Secretory IgA correlates with low beneficial flora levels and an increase in pathogenic and parasitic organism being present.

Treatment: Investigate the root cause and rule out parasitic organisms or pathogenic bacteria. Consider the use of probiotics (saccharomyces boulardii), choline, essential fatty acids, glutathione, glycine, glutamine, phosphatidylcholine, Vitamin C and Zinc which are all required for efficient production of Secretory IgA.

PLEASE NOTE: A low Secretory IgA should be reviewed in conjunction with the stool formation. An artefactually low level may be due to fluid dilution effects in a watery or unformed/loose stool sample.

Parasites/Worms Comment

ELEVATED BLASTOCYSTIS HOMINIS LEVEL:

Significant copies per gene of Blastocystis hominis have been detected in this stool sample. Blastocystis hominis may be the cause of persistent, mild diarrhoea. It is endemic in Australia, although it may also be associated with recent overseas travel. Detection suggests the ingestion of contaminated material or contact with farm animals. Continued symptoms may require further testing for the detection of bacterial, viral and/or parasitic co-pathogens.

TREATMENT SUGGESTIONS:

Mild symptoms are self-limiting.

If treatment is warranted, metronidazole 400 - 750mg (child 12-17mg/kg up to 750mg) three times daily for at least 10 days. Lower dosages are usually associated with treatment failure.

Rule out allergy to above medication before prescribing/taking. Consult ID specialist if patient is showing severe symptoms or immunocompromised.



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Opportunistic Bacteria Comment

STREPTOCOCCUS SPECIES:

Description:

Streptococcus is a gram-positive bacteria in the Firmicutes phylum. Streptococcus is generally a common isolate from gut flora. However, emerging research suggests that high levels in the intestine may result from low stomach acid, PPI use, reduced digestive capacity, SIBO or constipation; Elevated levels may also be indicative of intestinal inflammatory activity, and may cause loose stools.

Sources:

Recent infections with streptococcus pyogenes or scarlet fever can be linked to the presence of this species in faeces.

Treatment:

Treatment of streptococcus in gut flora is not always recommended. A practitioner may take into consideration a range of patient factors and symptoms to determine if treatment is necessary. In this case please refer to the 4R treatment protocol located at the end of this report.

METHANOBACTERIACEAE:

Of the Methanobacteriaceae(family), Methanobrevibacter smithii is the main human methanogen almost always found in the digestive tract of adults.

Methanobacter species facilitate carbohydrate fermentation and short-chain fatty acid production by beneficial bacteria.

Lower levels may indicate reduced production of short-chain fatty acids and may be associated with inflammation.

Higher levels linked to chronic constipation, as well as some types of SIBO and IBS which often correlate to a SIBO breath test.

DESULFOVIBRIO COMMENT:

Sulfate is present in different concentrations in the intestine dependent on diet. Remnants not absorbed, alongside the presence of lactate, promote the growth of Sulfate reducing bacteria (SRB). Desulfovibrio Piger is the dominant SRB genus and has been implicated in gastrointestinal disorders such as ulcerative colitis via the reduction of sulfate to hydrogen sulphide in the gut.

High Desulfovibrio piger levels serves as an indicator of inflammatory bowel disease.

Treatment options include lowering the intake of sulfate rich foods such as some breads, dried fruits, beers, ciders and wines. It is also suggested to avoid foods high in fat.

OXALOBACTER COMMENT:

Oxalate is formed in the liver by amino acid catabolism as well as present in a wide range of foods including tea, coffee, chocolate and certain fruits and vegetables. High concentration of oxalate in the urine is related to the potential formation of calcium oxalate kidney stones. Oxalobacter Formigenes is the main known bacterial species involved in oxalate degradation in the gut.

Levels of O. Formigenes tends to decrease with age as well as with the use of antibiotics or other drugs, with low levels identified as a risk factor for calcium oxide stone formation. Treatment options include probiotic treatment and low oxalate diet modification.

Urinary oxalate levels can also be monitored by test code 4025 (oxalate urinary).

Potential Autoimmune Comments

FUSOBACTERIUM SPECIES:

Fusobacterium species is a gram-negative bacteria in the Fusobacteria phylum. The bacteria is a common member of the human oral microbiome, this pro-inflammatory bacterium can also be found in the human gut. In the mouth, high levels are strongly linked to oral hygiene. In the gut, high levels have been observed in individuals with colon cancer and appendicitis. Review Fusobacterium levels in conjunction with elevated calprotectin levels.

Sources:

It primarily uses protein as its main source. However, research also shows that it can thrive from sugar.

Treatment:

Antimicrobial botanicals such as berberine, oregano, quercetin, curcumin, green and black tea extracts, blueberry extract, cinnamon and rosemary have shown to decrease levels.

Phyla Microbiota Comment

BACTEROIDETES PHYLUM:

Bacteroidetes make up approximately 28% of the gut Microbiota in healthy human adults. They are early colonisers of the infant gut and are amongst the most stable, at a species and strain level, in the host.

FIRMICUTES PHYLUM:

Firmicutes constitutes the most diverse and abundant group of gastrointestinal microbiota which are grouped into four classes, Bacilli, Clostridia, Erysipelotrichia, and Negativicutes. According to current literature, about 39% of gut bacteria is made up of firmicutes and



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may increase to as high as 80% in an imbalanced microbial community.

ELEVATED FIRMICUTES LEVEL:

Elevated Firmicutes may suggest microbial imbalance which may be related to increased caloric extraction from food, fat deposition and lipogenesis, impaired insulin sensitivity, and increased inflammation.

Treatment:

Consider using Bifidobacteria probiotics and Saccharomyces boulardii primarily. It may also be suggested to optimise the patient diet. A lower fat diet may help to normalize Firmicutes levels.

Normal Bacterial Flora Comment

LOW BIFIDOBACTERIUM LEVEL:

Organism of the Actinobacteria phylum.

Low levels may result from low fiber intake or reduced mucosal health. Thrives on a wide variety of prebiotic fibers.

LOW BIFIDOBACTERIUM LONGUM LEVEL:

Bifidobacterium longum is one of the well-established probiotic strains with numerous profound health benefits in humans. Supplementing with Bifidobacterium longum has been effective in alleviating gastrointestinal, immunological and infectious diseases. Increasingly, evidence is accumulating which shows beneficial effects of supplementation with bifidobacteria for the improvement of human health conditions ranging from protection against infection to different extra- and intra-intestinal positive effects. Moreover, bifidobacteria have been associated with the production of a number of potentially health promoting metabolites including short chain fatty acids.

ELEVATED ESCHERICHIA SPECIES LEVEL:

The Gram-negative genus in the Proteobacteria phylum, which are considered normal gut flora. Escherichia coli (E. coli) is the primary species in this genus. Most E. coli are non-pathogenic. Elevated levels may be indicative of increased intestinal inflammatory activity.

LOW LACTOBACILLUS RHAMNOSUS LEVEL:

Lactobacillus Rhamnosus is a bacteria in the Firmicutes phylum. Lactobacillus rhamnosus is one of the most widely used probiotic strains. Various health effects are well documented including the prevention and treatment of gastro-intestinal infections and diarrhea, and stimulation of immune responses. Low levels may be linked to poor digestive health, diarrhea and IBS symptoms.

ELEVATED CLOSTRIDIUM SPECIES LEVEL:

Organism of the Firmicutes phylum. The Clostridium genus is diverse and consists of both pathogens and normal commensals that perform a wide variety of functions (beneficial and potentially harmful). High levels may result from reduced digestive capacity or constipation.

LOW AKKERMANSIA MUCINIPHILA LEVEL:

Akkermansia muciniphila is an organism that lives in the mucus lining of your gut and uses mucus as its primary energy source. This species plays an important role in regulating mucus turnover in the gut so that there is a good balance between mucus breakdown and mucus production. Akkermansia muciniphila promotes healthy intestinal barrier and modulates immune responses.

Low levels of Akkermansia muciniphila has been observed in individuals with IBS, high fat diets, obesity, and type 2 diabetes. Reducing intake of high fat foods may help increase levels of this bacteria.



The Four “R” Treatment Protocol

REMOVE	Using a course of antimicrobial, antibacterial, antiviral or anti parasitic therapies in cases where organisms are present. It may also be necessary to remove offending foods, gluten, or medication that may be acting as antagonists. Consider testing IgG96 foods as a tool for removing offending foods.	ANTIMICROBIAL	Oil of oregano, berberine, caprylic acid
		ANTIBACTERIAL	Liquorice, zinc carnosine, mastic gum, tribulus, berberine, black walnut, caprylic acid, oil of oregano
		ANTIFUNGAL	Oil of oregano, caprylic acid, berberine, black walnut
		ANTIPARASITIC	Artemesia, black walnut, berberine, oil of oregano
		ANTIVIRAL	Cat's claw, berberine, echinacea, vitamin C, vitamin D3, zinc, reishi mushrooms
		BIOFILM	Oil of oregano, protease
REPLACE	In cases of maldigestion or malabsorption, it may be necessary to restore proper digestion by supplementing with digestive enzymes.	DIGESTIVE SUPPORT	Betaine hydrochloride, tilactase, amylase, lipase, protease, apple cider vinegar, herbal bitters
REINOCULATE	Recolonisation with healthy, beneficial bacteria. Supplementation with probiotics, along with the use of prebiotics helps re-establish the proper microbial balance.	PREBIOTICS	Slippery elm, pectin, larch arabinogalactans
		PROBIOTICS	Bifidobacterium animalis subsp. lactis, lactobacillus acidophilus, lactobacillus plantarum, lactobacillus casei, bifidobacterium breve, bifidobacterium bifidum, bifidobacterium longum, lactobacillus salivarius, salivarius, lactobacillus paracasei, lactobacillus rhamnosus, Saccaromyces boulardii
REPAIR & REBALANCE	Restore the integrity of the gut mucosa by giving support to healthy mucosal cells, as well as immune support. Address whole body health and lifestyle factors so as to prevent future GI dysfunction.	INTESTINAL MUCOSA IMMUNE SUPPORT	Saccaromyces boulardii, lauric acid
		INTESTINAL BARRIER REPAIR	L-Glutamine, aloe vera, liquorice, marshmallow root, okra, quercetin, slippery elm, zinc carnosine, Saccaromyces boulardii, omega 3 essential fatty acids, B vitamins
		SUPPORT CONSIDERATION	Sleep, diet, exercise, and stress management